

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Mound Branch

Waterbody Segment at a Glance:

County: Bates
Nearby Cities: Butler
Length of impairment: 1 mile
Pollutant: Biochemical Oxygen Demand (BOD) and Ammonia (NH₃N)
Source: Butler Wastewater Treatment Plant



State map showing location of watershed

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of Mound Branch

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- The Missouri Water Quality Standard, found in 10 CSR 20-7.031 Table A, for dissolved oxygen (related to BOD) in streams is 5.0 mg/L (milligrams per liter or parts per million). Exceptions to this standard are allowed where natural dissolved oxygen levels are less than 5.0 mg/L. In these cases, the naturally occurring dissolved oxygen levels must be maintained.
- The ammonia standards are found in 10 CSR 20-7.031 Table B. Looking in the table for “Acute Criteria for Total Ammonia: Limited Warm-Water Fishery”, and assuming typical water temperature and pH values, Mound Branch would have an ammonia standard of 2.0 mg/L in summer and 3.3 mg/L in winter.

Background information and Water Quality Data

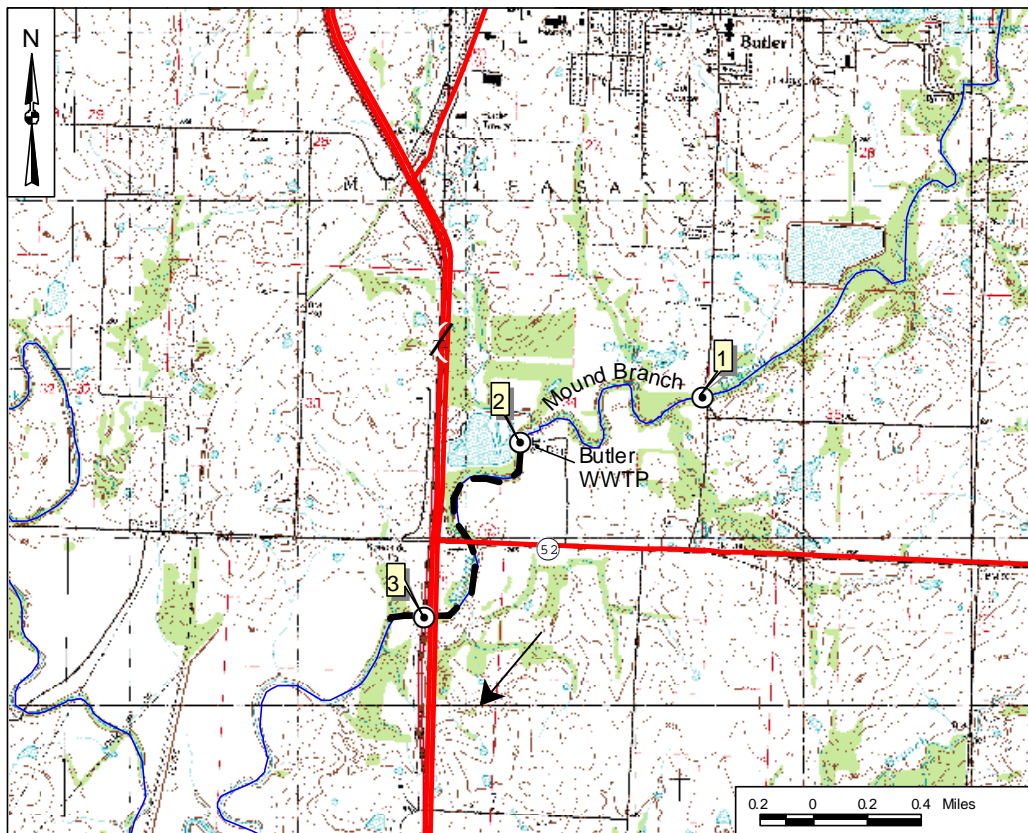
Mound Branch historically has had depressed levels of dissolved oxygen downstream and elevated levels of ammonia from the Butler Wastewater Treatment Plant (WWTP). Most aquatic organisms require high levels of oxygen to survive, but wastewater high in high Biochemical Oxygen Demand (BOD) reduces the amount of dissolved oxygen in the stream’s water. Also, in sufficient

concentration, ammonia can be toxic to fish and other aquatic life and can remove dissolved oxygen from the water.

The Butler WWTP underwent an upgrade that was completed in March 2003. Later that year, a water quality study of Mound Branch and Miami Creek (into which Mound Branch flows) showed good wastewater treatment by the City of Butler and acceptable water quality conditions in Mound Branch itself.

Like all wastewater treatment plants in Missouri, the Butler WWTP must meet the requirements of a discharge permit issued by Missouri Department of Natural Resources that requires the treatment plant to meet discharge limits that are protective of instream water quality standards. The table below shows the mean water quality values for water quality studies in 1997 and 2003.

Location Map of Mound Branch, Bates County Showing Sampling Sites



--- Impaired Segment → Direction of flow

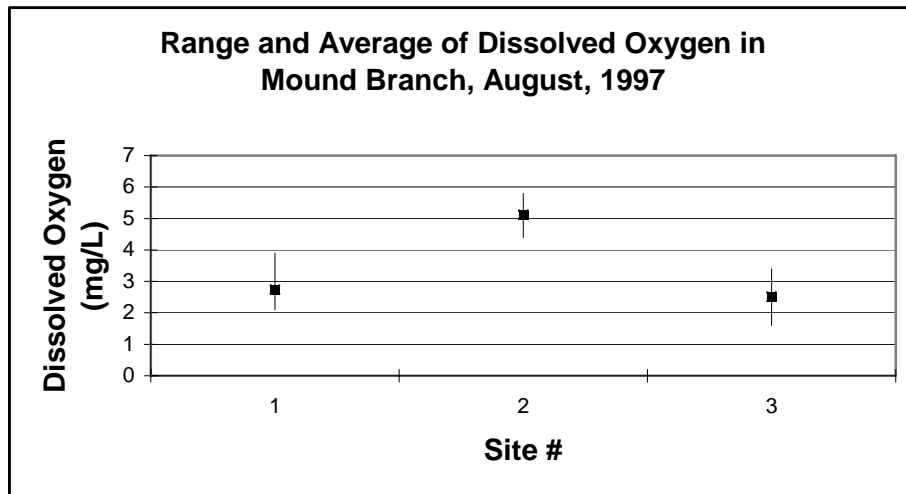
Site Index

- 1 – Mound Branch 1.2 miles above Butler WWTP
- 2 – Butler WWTP Outfall
- 3 – Mound Branch 0.9 mile below Butler WWTP

Water Quality in Mound Branch and Miami Creek in the Vicinity of the Butler WWTP, 1997 and 2003

Site	Mean Water Quality in mg/L					
	AM C	AM DO	NH3N	NO3N	TP	CBOD5
Miami Creek 2 miles upstream of Mound Branch	23	2.5	0.09	0.26	0.15	2
Mound Branch 1.2 miles upstream of Butler WWTP	23	2.0	0.16	0.14		12.1
Butler WWTP effluent	24.5	5.5	2.76	10.24	3.80	<2
Mound Branch 0.6-0.9 mile downstream of Butler WWTP	23	2.2	1.24	8.26	2.12	<2
Mound Branch 2.5 miles downstream of Butler WWTP	24	3.0	0.08	8.84	1.22	<2
Miami Creek 5.7 miles downstream of Butler WWTP	23	2.6	0.08	0.77	0.19	
Miami Creek 7.8 miles downstream of Butler WWTP	23	2.9	0.05	0.77	0.17	

Note: AM C=early morning water temperature (Celsius), AM DO=early morning dissolved oxygen, NH3N= ammonia, NO3N=nitrate nitrogen, TP=total phosphorus, CBOD5=five day carbonaceous oxygen demand.



Source: Missouri Department of Natural Resources

For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

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